

Please amend claims 1, 10, 11, 15, 32, 36, 37, 46, 47, 50, 53, 55, 59, 62, 67, 71, 72, 77 and 78, as follows:

**REWRITTEN CLAIMS IN MARKED UP FORM PURSUANT TO**

**37.C.F.R. Sec. 1.121(c)(1)(ii):**

1. (Amended) A combination of a laminate (400) and a substrate (450,650) comprising

a waterproof substrate (450, 650); and

a laminate (400) joined to said substrate (450,650) at a waterproof seam (500), the laminate (400) having a first layer (5) comprising a waterproof functional layer (10, 20), and a second layer (30) laminated to said first layer (5) and comprising at least a first component and a second component, the first component being stable to a first temperature and the second component melting at a second temperature, wherein the first temperature is higher than the second temperature and wherein the second component has been heated and melted to form the waterproof seam between the laminate and the waterproof substrate.

10. (Amended) The combination of claim 1, whereby the second component melts [is meltable] at a temperature in the range of from 80° C to 170° C.

11. (Amended) The combination of claim 1, whereby the first component [is stable to] does not melt below a temperature of [at least] 140° C.

15. (Amended) The combination of claim 1, wherein the first component is selected from the group of polymers comprising polyolefins [including polypropylene and polyethylene], polyester, co-polyester, polyamide, co-polyamide, cellulose or protein fibers [including wool and silk].

32. (Amended) The combination of claim 31, wherein the functional layer (5) is selected from the group of materials consisting of polyesters, polyamide, polyolefins, polyvinylchloride, polyketones, polysulfones, polycarbonates, fluoropolymers [including polytetrafluoroethylene (PTFE)], polyacrylates, polyurethanes, co-polyetheresters, and co-polyetheramides.

36. Articles of clothing made from the combination of [claims] claim 1 [to 35].
37. (Amended) A combination of [a] two laminates (400, 450, 650) joined together at a waterproof seam (500), each of the laminates (400, 450, 650) comprises:
- a first layer (5) comprising a waterproof functional layer (10, 20), and
  - a second layer (30) laminated to said first layer (5) and comprising at least a first component and a second component, the first component being stable to a first temperature and the second component melting at a second temperature, wherein the first temperature is higher than the second temperature and wherein the second component has been heated and melted to form the waterproof seam between the two laminates.
38. Cancelled.
46. (Amended) The combination of claim 37, whereby the second component melts [is meltable] at a temperature in the range of from 80° C to 170° C.
47. (Amended) The combination of claim 37, whereby the first component [is stable to] does not melt below a temperature of [at least] 140° C.
50. (Amended) The combination of claim 37, wherein the first component is selected from the group of polymers comprising cellulose, protein fibers [including wool and silk] , polyolefins [including polypropylene and polyethylene], polyester, co-polyester, polyamide, and [or]co-polyamide.
53. (Amended) The combination of claim 52, wherein the second component is selected from the group of thermoplastics comprising co-polyester, polyamide, co-polyamide and [or] polyolefin [including polyethylene and polypropylene].
55. (Amended) The combination of claim 53 [54], wherein the second component is a polyamide [6.0] 6.

59. (Amended) The combination of claim 37, wherein the second [component is a blend of yarns] layer is composed of a plurality of yarns in the form selected from strands, filaments, threads, and fibers.
62. (Amended) The combination of claim 45, wherein the propellant is activated at a [third] temperature [the third temperature being] intermediate between the second and first temperatures.
67. (Amended) The combination of claim 66, wherein the functional layer (5) is selected from the group of materials consisting of polyesters, polyamide, polyolefins, polyvinylchloride, polyketones, polysulfones, polycarbonates, fluoropolymers [including polytetrafluoroethylene], polyacrylates, polyurethanes, co-polyetheresters, and co-polyetheramides.
71. (Amended) The combination of [one of claims] claim 37 [to 70,] in a garment.
72. (Amended) The [A] combination of claim 1 having two waterproof laminates (400, 450, 650), each having a functional layer (10, 20) laminated to a textile layer (30), and being joined together at a welded waterproof seam (500), wherein the waterproof seam (500) has a transverse seam strength of greater than 3 pli and an elongation strain at break greater than 75%.
77. (Amended) The [A] combination of claim 1 having two waterproof laminates (400, 450, 650), each having a functional layer (10, 20) laminated to a textile layer (30), and being joined together at a welded waterproof seam (500), wherein the waterproof seam (500) has a transverse seam strength of greater than 3 pli and wherein the stiffness of the seam (500) is less than 50 mm<sup>-1</sup>.
78. (Amended) The combination of claim 77, wherein the seam (500) has a width of less than 0.25 [025] cm.

Please add claims 84-104, as follows:

84. The combination of claim 17, wherein the second component is selected from the group of thermoplastics comprising co-polyester, polyamide, co-polyamide or polyolefin.
85. The combination of claim 84, wherein the second component is a polyethylene.
86. The combination of claim 84, wherein the second component is a polyamide 6.
87. The combination of claim 13, wherein the yarn has a bi-component structure comprising the first component and the second component.
88. The combination of claim 87, wherein the yarn has a cover-core structure, wherein the second component forms the cover.
89. The combination of claim 87, wherein the yarn has a "side-by-side" structure.
90. The combination of claim 13, wherein the second layer is a blend of said plurality of yarns selected from strands, filaments, threads and fibers.
91. The combination of claim 13, wherein the yarn is comprised of fibers.
92. The combination of claim 9, wherein the propellant after activation generates a closed cell foam with the second component after melting.
93. The combination of claim 9, wherein the propellant is activated at a temperature intermediate between the second temperature and the first temperature.
94. The combination of claim 9, wherein the propellant is an integral part of the second component.

95. The combination of claim 1, whereby the first component does not disintegrate below a temperature of 140° C.
96. The combination of claim 37, whereby the first component does not disintegrate below a temperature of 140° C.
97. The combination of claim 15, wherein the first component is a polyolefin selected from polypropylene and polyethylene.
98. The combination of claim 15, wherein the first component is a protein fiber selected from wool and silk.
99. The combination of claim 32, wherein the functional layer is polytetrafluoroethylene (PTFE).
100. The combination of claim 50, wherein the first component is a polyolefin selected from polypropylene and polyethylene.
101. The combination of claim 50, wherein the first component is a protein fiber selected from wool and silk.
102. The combination of claim 52, wherein the second component is a polyolefin selected from polypropylene and polyethylene.
103. The combination of claim 66, wherein the functional layer is polytetrafluoroethylene (PTFE)
104. The combination of claim 84, wherein the second component is a polypropylene.

#### REMARKS

Applicant's representative appreciates the courtesies extended by the Examiner during the personal interview of September 6, 2002. During the interview, samples according to the present invention were compared to prior art samples and all of the pending claims were discussed.

Upon entry of the instant claim amendments claims 1-17, 29-37, 39-80, and 84-104 are pending in this application. Claims 84-94 correspond to claims

18-28 of the PCT application, which were inadvertently missing from the PCT application at the time of publication. Claims 38 and 81-83 have been cancelled without prejudice or disclaimer, claims 10, 11, 15, 32, 36, 37, 46, 47, 50, 53, 55, 59, 62, 67, 71, 72, 77 and 78, have been amended, and new claims 84-104 have been added; no new matter has been added by the claim amendments. Support for the amendments may be found in the specification and the Figures. Applicant respectfully requests reconsideration of the present application in view of the following remarks.

#### Election/Restriction Requirement

In response to the restriction/election of species requirement, applicant affirms election of claims 1-80, belonging to Group I, and directed to a multi-layered laminate which forms a seam with a substrate layer or a second multi-layered laminate. Claims 81-83 have been cancelled without prejudice or disclaimer.

#### Non-Statutory Provisional Double Patenting Rejection

A nonstatutory provisional double patenting rejection was issued to claims 1, 9-17, 29-33, 36, 37, 45-58, 61-69, and 71, over claims 35-39 and 64-91, of copending Application 09/308,544. Applicant is filing concurrently herewith a Notice of Express Abandonment of Application No. 09/308,544. Thus the provisional double patenting rejection has been rendered moot.

#### Specification Objections

The disclosure was objected to for informalities. At page 20, "0,13" was amended to read "0.13". No new matter has been added by this amendment to the specification.

#### Claim Objections

Claims 10 and 46 were objected to, where the phrase "component is meltable at a temperature" was deemed grammatically awkward. Claims 10 and 46 have been amended to read more clearly.

Claim 55 was objected to as being in improper dependent form, and has been amended to correct this error.

Claim 78 was objected to where "025" should read "0.25". The claim has been amended to correct this error.

#### Claim Rejections - 35 U.S.C. §112

Claims 11, 15, 32, 47, 50, 53, 59, 60, and 67 were rejected under 35 U.S.C. §112, 2<sup>nd</sup> ¶. Claims 11 and 47 were deemed indefinite where it was

stated that the phrase "the first component is stable...". Applicant asserts that the claim amendments render moot this rejection.

Claims 15, 32, 50, 53, and 67 were deemed indefinite. Again, Applicant asserts that the amendments to the claims render this rejection moot.

Claims 59 and 60 were rejected where claim 59 recites "the second component is a blend of yarns" which was deemed indefinite. Claim 59 has been amended to overcome this rejection, which renders moot the rejection to both claims 59 and 60.

#### Claim Rejection - 35 U.S.C. §103 (a)

Prior to addressing the rejections under 35 U.S.C. Section 103(a), applicant believes a brief description may be helpful to understand the presently claimed invention. The presently claimed invention is directed to a novel combination of a laminate joined to a waterproof substrate at a waterproof seam. The laminate comprises a first waterproof functional layer and a second layer laminated to the first layer. The second layer comprises at least a first and second component, the first component is stable to a first temperature, and the second component melts at a second temperature (which is lower than the first) to form the waterproof seam.

The specification describes the state of the art prior to the present invention. Before the development of the presently claimed combination, obtaining waterproof seams between a laminate having a textile layer and a waterproof substrate was difficult. One difficulty of forming waterproof seams lies in the textile layer. Thick woven/knitted textile layers comprise yarns formed of bundles of fibers, having multiple air spaces which need to be sealed to obtain a waterproof seal; if the air spaces are not adequately sealed, the garment fails to be waterproof. Thus, it is easier to seal nonwoven textile layers which are thinner and in which, for example, a relatively thin adhesive bead can penetrate the textile layer.

The prior art provides one way to obtain a waterproof seam between a textile layer and another substrate: by the addition of a seam sealing tape, such as the one developed by W.L. Gore & Associates, and which was used for years prior to the present invention. Other methods include the application of adhesive beads between layers; wide seams are used to obtain a seal in the thicker knitted or woven layer. Wide seams, however, are disadvantageous due to comfort loss, stiffness, and the like.

The novel combination of laminates and substrates of the present invention in which the laminate combines a waterproof functional layer and a second layer having first and second components, and where the laminate and the substrate are joined at a seam formed by the components of the second layer, were not known prior to the present invention, and overcome a long felt need in the area of waterproof garments.

Claim Rejections Under 35 U.S.C. §103(a)

Claims 1-17, 29-54, 56, 57, and 61-80 were rejected under 35 U.S.C. §103(a) as being obvious over JP 03-174051 (Derwent English Abstract and PAJ English Abstract; herein '051) in view of Gore et al. (4,194,041, herein 'Gore'), Richmond et al. (3,100,926, herein 'Richmond'), and DE4244731 A (herein, '731).

It is stated in the Office Action that '051 teaches using foamed fiber to create a woven, knit etc. structure, and the foamed fiber can be a sheath/core, multicore/sheath, etc. fiber, where one component is expandable and one is fibrous. It is further stated that the abstract discloses that the fabric is latent expandable, that is to say that it can be expanded after it has been formed into a fabric, and can be used in protective material of water resistant clothing.

The Office Action states that '051 1) fails to teach using the foamed fabric in combination with a functional layer (page 6). It is also stated that 051 2) fails to teach producing waterproof seams ( page 6). Moreover, it is stated that '051 3) fails to disclose specific materials used to create the foamed fiber (page 7). Applicant asserts that '051 further fails to teach 4) components having melt temperature differences, 5) a laminated expandable fabric, 6) a woven or knit layer in combination with a waterproof layer, and 7) a fabric component which is capable of being heated to melt a fabric component to provide a waterproof seam with another substrate or laminate. Further, applicant asserts that '051 teaches an expandable fabric in which the expandable fabric acquires the protective features of strength and water resistance only upon expansion; thus, '051 also fails to teach 8) a fabric of the present invention which is inherently waterproof in the absence of "expansion".

In view of the deficiencies of the teachings of '051, and the lack of disclosure or suggestion in '051 to motivate one skilled in the art to modify it in such a way as to render obvious the presently claimed invention, Applicant respectfully traverses the rejection.

Gore is cited to overcome the deficiencies of '051 which fails to disclose using the foamed fabric in combination with a functional layer. In the Office



Action it is stated that it would have been obvious to one skilled in the art to add a waterproof and water vapor permeable functional layer of Gore to outerwear fabrics produced by the foamed fabrics of '051 to improve water resistance while allowing it to remain breathable. Applicant asserts that there is no disclosure or suggestion in the teaching of '051 to modify '051, to combine the expandable fabric layer with a composite layer which is waterproof and water vapor permeable. One skilled in the art would have no reason or motivation to modify '051 to combine a fabric which is already waterproof (Gore) with a fabric that is merely water resistant.

Moreover, there is no suggestion or disclosure, and therefore no motivation, to form a laminate of the fabric from '051. The '051 abstract (JP) teaches that the latent expandable fabric can be arranged on at least the surface/interior and mixed with other expandable materials, and the resulting mixture is then subjected to expanding treatment. However, applicant asserts that there is no disclosure or suggestion in '051 of forming a laminate with a fabric having latent expandability and a waterproof laminate composite.

It is stated in the Office Action that '051 discloses making garments from expandable fabrics, and that garments laminated to a functional PTFE layer would have seams. Further it is stated that a garment made from the expandable laminate described above would produce a four layer laminate at the seam. The Office Action states that '051 fails to disclose a waterproof seam, and DE 4244731 is cited to overcome this deficiency. It is stated that DE 4244731 discloses using expandable threads to sew together sheets of material to produce water-resistant seams without the use of sealants. Moreover, it is stated that expandable threads produce seams with good water tightness and adhesion, and thus, it would be obvious to use the expanding fibers of '731 to produce water tight seams in the expandable fabric of '051. Therefore claims 1, 13, 14, 31-33, 36, 37, 49, 56, 57, 66, 67, and 68 were rejected. Applicant asserts '051 is directed to expandable fabric and which may be used as "protective material of water resistance layer" (Derwent). However, there is no disclosure or suggestion to prepare laminate clothing from this material wherein the garments are waterproof or where the garments have waterproof seams.

Moreover, even if there was motivation to combine the cited documents, the presently claimed invention would not be rendered obvious. First, the presently claimed invention is directed to combinations having waterproof seams between two substrates (as described more specifically in the claims). The combination of documents including '051 and '731 provide a

water resistant fabric with seams that are "largely liquid-tight", thus the presently claimed invention is patentably distinct. Applicant asserts that one skilled in the art would understand the difference between a seam which is waterproof and one which is described as at least splashproof or largely liquid-tight. Second, where the water resistant seams of '731 are derived from expandable threads, and the water proof seams of the present invention are formed from a bicomponent laminate layer which is heatable to melt the second component to form the waterproof seam between substrates, applicant asserts that the claimed invention is structurally patentably distinct.

Rejecting claims 9, 10-12, 15-17, 29, 30, 45-48, 50-54, 61, 63-65, and 71, Richmond is cited to overcome the deficiencies of '051, which fails to disclose specific materials used to create the foamed fiber. Applicant asserts that where '051 fails to disclose specific materials used to create foamed fiber, '051 also fails to teach the use of components having melt temperature differences in which one is capable of melting to form a waterproof seam. Moreover, '051 fails to teach specific foaming agents. Applicant asserts that the specific mechanism of foaming could not be known by one skilled in the art based on the disclosure of '051. Thus, where foaming can be accomplished by the addition of a foaming agent by non-thermal means such as chemical, solvent, water activation and the like, there is no disclosure or suggestion that the fibers of '051 have different melt temperatures, nor where one is meltable to provide a waterproof seam. Thus, '051 provides no motivation to one skilled in the art to modify the fabric by providing a bicomponent fabric having two different components with different melting temperatures where one is capable of melting to form a waterproof seam, and thereby rendering the presently claimed invention obvious. Further, one skilled in the art would not be motivated to look to Richmond where there is no disclosure or suggestion to do so.

Richmond teaches producing latent expandable fibers which can be used to produce woven, knitted or other fabric articles, but does not disclose however, forming waterproof seams. Richmond teaches that the expandable material taught therein will be softened such that the surfaces of the strands will be pressed into each other at their juncture, and upon cooling a bond will be formed at the juncture of the threads (column 4, starting at line 18). Applicant asserts that this is unlike the bicomponent material of the present invention which requires that the laminate is heatable to melt one of the components to form a seam. It would be understood by one skilled in the art

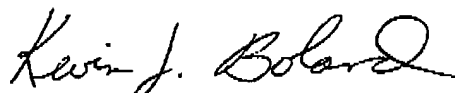
that unlike the meltable component in the presently claimed invention, in order for the fabric of Richmond to maintain the fabric weave, the material could not be heated beyond 'softening' (Office Action at page 9). Thus, the deficiencies of '051 are not overcome by the teaching of Richmond.

Claims 2-7, 8, 34, 35, 39-44, 58, 59, 60, 69, 70, 72-79, and 80 were rejected under 35 U.S.C. 103(a) over '051 in view of Gore and/or Richmond and/or '731, and claim 56, further in view of Fujimura et al. Applicant asserts that where the above claims, as amended are dependent either directly or indirectly upon independent claims 1 or 37, the combination of references does not rendered obvious these claims for the reasons stated above for claims 1 and 37. Thus, removal of the rejection is respectfully requested.

#### Conclusion

In view of the amendments and remarks herein, reconsideration and allowance of the pending claims is respectfully requested. Should the Patent Office deem that any further action is necessary in connection with this application, applicant requests that the Patent Office contact applicant's undersigned representative.

Respectfully submitted,



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Enclosure: Clean Version of Amended Claim Set